

Poster presentation

Open Access

Methotrexate does not primarily affect Foxp3⁺ regulatory T cells in poly-articular juvenile idiopathic arthritis

SJ Vastert*, FJ Verweij, W de Jager, NM Wulffraat, F van Wijk and BJ Prakken

Address: Wilhelmina Childrens Hospital, University Medical Centre, Utrecht, Netherlands

* Corresponding author

from 15th Paediatric Rheumatology European Society (PreS) Congress
London, UK. 14–17 September 2008

Published: 15 September 2008

Pediatric Rheumatology 2008, **6**(Suppl 1):P23 doi:10.1186/1546-0096-6-S1-P23

This abstract is available from: <http://www.ped-rheum.com/content/6/S1/P23>

© 2008 Vastert et al; licensee BioMed Central Ltd.

Background

Methotrexate (MTX) is the most widely used disease modifying anti-rheumatic drug in juvenile idiopathic arthritis (JIA), inducing long-lasting remission in many patients. It usually takes 6–12 weeks before anti-inflammatory effects are clinically noticed, suggesting modulatory effects on T cells. We examined the effect of MTX on (induced) regulatory T cells (T_{reg}) in JIA.

Materials and methods

We sampled 11 patients with active poly-articular JIA (poly-JIA) prior to and 3–6 months after initiating MTX. Moreover, 11 poly-JIA patients in remission on MTX were sampled prior to and 3–6 months after withdrawal of MTX. Frequency and characteristics of Foxp3⁺CD4⁺T_{reg} and effector T cell subsets were analyzed by flowcytometry. Function of T_{reg} was evaluated in suppression assays. Responses to human heat shock protein 60 (HSP60) were studied in proliferation assays.

Results

MTX-treatment resulted in a decrease of Foxp3⁺CD4⁺T_{reg} (3,7% to 2,8% of CD4⁺T cells). Suppressive function of T_{reg} was not altered by MTX. Interestingly, stimulation with anti-CD3 resulted in increased proliferation of CD4⁺CD25⁻ effector T cells after 3 months MTX compared to pre-MTX. Moreover, proliferative responses to human HSP60 increased after MTX-treatment. The quality of the HSP60-response changed with a less pro-inflammatory cytokine profile in supernatants after MTX-treatment. When JIA-patients in remission on MTX-treatment withdrew MTX, the frequency of T_{reg} increased (3,2 to 3,8%

of CD4⁺ T cells) but their suppressive function remained unchanged.

Conclusion

MTX seems to exert its immune-modulating effects not by affecting Foxp3⁺ T_{reg}. Instead, we observed changes in effector T cells and HSP60 specific T cells.